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Last Year, many cotton crops were reduced by severe boll weevil damage and unfavorable weather during the growing season. This year, farmers are faced with acreage restrictions. Maintaining cotton as a major source of cash income is a serious problem, under present conditions.

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- **3.** Thin to two or three plants per foot. Cultivate to keep out weeds. Use a com-



plete insect control program, dusting or spraying as often as necessary to prevent crop damage by pests. Defoliate when bolls are formed.

Remember, fertilizer and nitrogen sidedressing are the key to big cotton yields. They help you get greater profits from the money you spend on seed, labor and insect control. This is an excerpt from a Barrett farm magazine advertisement. Barrett advertising helps you to promote a balanced fertilizer program, by selling mixed fertilizer for use at planting, and ARCADIAN, the American Nitrate of Soda for side-dressing.

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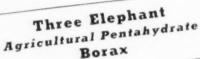
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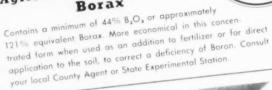
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JUST AROUND THE CORNER

By Vernon Mount



Acts of God and Congress are merging. This is pointed up neatly, and quite seriously in Washington where it is proposed to write into the law of the land that weather, man-made by act of Congress, is to be construed as an act of God in case somebody tries to sue somebody for damage caused by artificially produced rain. Not satisfied with guiding our lives from womb to tomb, running our business affairs for us, hoarding basic commodities until they run out of our ears...

Congressional immunity is certainly extending to heroic proportions with that little proposal.

People are awakening. Some of the conservative senators, whose seats were in danger, now seem surer of reelection than when I warned about it a few months back. But it is a thin line of conservatives who stand between us and outright turning down the path England has followed. And every vote for a conservative will count this crucial year. Some are Democrats and some are Republicans...so I am not getting into politics when I issue these warnings.

What a deficit we'll have! It is already running well toward a six billion dollar red ink figure for this year. And when the added defense measures are voted, which are so very likely that I could almost guarantee them, the deficit will be even greater. But this is an election year of moment, and to vote higher taxes would be anathema ...and it never would occur to anyone in Washington to fire a few thousands of snoopers.

Business continues good. And, as I have said, when the defense program really gets rolling there will be little premonitary shortages. Then business will be even better. Watch and see!

Yours faithfully.

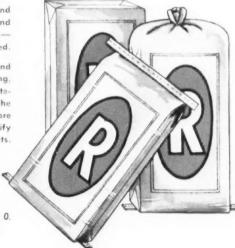
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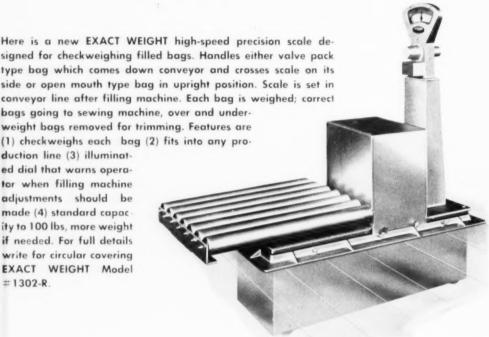
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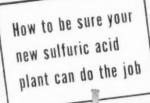
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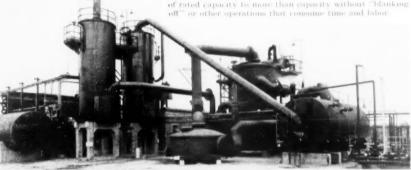
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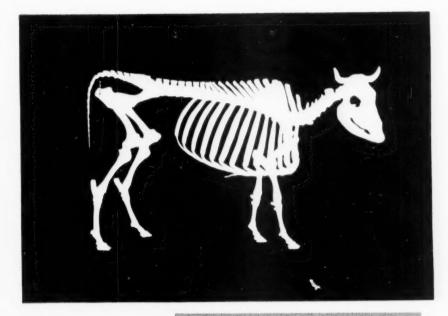
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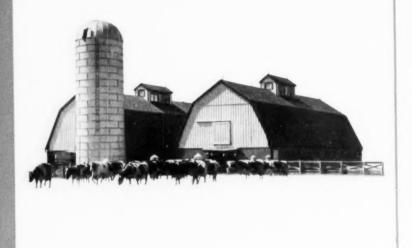
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APFC Convention Plans Revealed

Dr. Douglas S. Freeman of Richmond, Virginia, nationally-known author, historian and Pulitzer Prize winner will be the principal speaker at the Fifth Annual Convention of the American Plant Food Council to be held at The Homestead, Hot Springs, Virginia, June 29-July 2. Clifton A. Woodrum, President of the Council announces.

Approximately 400 members of the Council and their guests will attend the sessions which will feature addresses by leaders in the field of agriculture, education, Government and research.

Dr. Freeman will speak at the annual banquet session. Saturday evening, which will highlight the Convention. He holds Doctor's degrees from more than 20 of the Nation's leading Colleges and Universities and has served as a trustee of the Rockefeller Foundation, on the General Education Board of the Carnegie Endowment for International Peace and on the Woodrow Wilson Foundation. For his four volumes on Robert E. Lee in 1934, he was awarded a Pulitzer Prize. In addition to being honored by many institutions of higher learning, he has been active on Boards and Committees of nationally-known educational, historical and social organizations. He is recognized as one of the Nation's most distinguished orators.

The Convention sessions will formally begin Friday, June 30 with the Presidential address by Mr. Woodrum, following which U. S. Senator Spessard L. Hol-



Along with millions of other American citizens. I have long exercised my freedom to gripe about the government . . . one of the privileges of a free nation which perhaps we do not duly appreciate. But never have I griped about the U. S. Department of Agriculture.

That thought occurred to us here in the offices of Commercial Fertilizer a few weeks ago, and we called Washington, and talked to key men of the USDA. We told them we had opened our pages to NFA and APFC as well as the other associations in this field. We offered to open our pages wide to USDA.

They liked the idea, and this issue is largely devoted to an article which resulted from the phone call. We feel it is high time the activities of USDA which aid the fertilizer industry be put down all in one place... and this article helps to do that. And because it was appropriate for this issue we have added, for good measure, the article "25 Good Years Ahead" by USDA's O. V. Wells.

It seems to me we will all learn something vital, and have a better understanding of USDA's part in our future, if we read these two articles with care.

land, (D-Fla.) member of the Senate Committee on Agriculture and Forestry will speak.

Senator Holland, a former Governor of Florida, received his Ph.B., magna eum laude, from Emory College in 1912, LL.B., from University of Florida in 1916; honorary LL.D., from Rollins College in 1941, Florida Southern College in 1941 and Emory University, 1943. He served as a prosecuting attorney, county judge and was a member of the Florida State Senate. He distinguished himself in World War I with the

Army Air Corps and in 1918 was awarded the Distinguished Service Cross. He has served as a trustee of Emory University and Southern College. In 1931 he was President of the Executive Council of the University of Florida Alumni Association and served as a member since 1924 Coming from a State noted in particular for its phosphate industry. Senator Holland is regarded as a well informed man in the field of fertilizer.

W R. Thompson, Associate Leader, Extension Agronomy,

Continued no page 301

25 GOOD YEARS AHEAD

By O. V. Wills

Chief, Bureau of Agricultural Economics, USDA

American farmers, once again, are raising more than they can sell easily. One result is the announcement of acreage allotments for corn, cotton, wheat, and rice. This is calculated to cut the 1950 acreage of these crops almost 30 million acres.

What does it all mean?

Are our surpluses going to be chronic? Will farm prices and incomes drift along at a bare subsistence level?

I think not

I believe the prospect for agriculture over the next 25 years is good.

It's true that farmers lace some difficult adjustment problems. And other troubles are likely to develop from time to time But let's look at some of the underlying trends in our favor.

First, our population is still growing at a rapid rate.

There were 125 million people in the U.S. in 1930. Today there are 150 million. It seems conservative to forecast 175 million by 1975.

That means an increase of inesixth in our market for farm products here at home in the next 25 years—if each one of us consumes only as much as now.

Second, our standard of living is still rising.

Our per-capita food consumption is one-tenth greater now than it was before the war. Our consumption of the so-called "protective" foods—fruits, vegetables, milk, eggs, and meat—can and probably will be increased. The last three take a lot of grain and pasture to produce, and some of the acres used for that grain and pasture can come from such crops as cotton and wheat.

Third, farm efficiency is still rising.

We are producing more than one-third more than we did on the average from 1935 through 1939. We are producing two-thirds more than we did in 1910. And we are doing it with little more crop land and actually fewer farm workers than we had 25 years ago.

This means two things. Farmers can supply growing markets—in fact, the immediate problem is whether markets will grow fast enough over the next few years. Costs probably will

come down, which means that farm returns will gradually work upward, if prices stay somewhere near a fair level.

Fourth, farmers are learning how to work together in farm programs

(Continued on page 28)

CLIMATE The weather outside is the usual January kind but inside forage green and legumes are growing under green and legumes are growing under green from seeding to flowering with temperature humdity and light controlled Although the picture of growing grasses and legumes resembles a window view, the chamber has no window except the one showing at the right which is in the inner door and is used to view the plants briefly by opening the outer or covering door without disturbing the carefully regulated climate miside.



the April Parm Joseph

USDA and FERTILIZER TECHNOLOGY

By K. D. JACON

Bureau of Plant Industry, Soils, and Agricultural Engineering Agricultural Research Administration United States Department of Agriculture Beltsville, Maryland

Fertilizer technology research in the United States Department of Agriculture was placed on a continuing basis in 1911 when funds specifically designated for fertilizer investigations were appropriated by Congress for the first time. This appropriation was to the Bureau of Soils for "exploration and investigation within the United States to determine a possible source of supply of potash, nitrates, and other natural fertilizers." Subsequently, however, the work has undergone changes in emphasis, as one would expect, and shifts have been made in the agencies charged with its prosecution.

Investigations on chemical methods of fixing nitrogen from the atmosphere were initiated by the Bureau of Soils at the Arlington Experimental Farm, Arlington, Virginia, in 1914. In 1919 the Fixed Nitrogen Research Laboratory was established at the American University, Washington, D. C., by the War Department, with inclusion of the Arlington nitrogen-fixation unit. The Fixed Nitrogen Research Laboratory was transferred to the Department work of the Bureau of Soils to form the Division of Fertilizer and Fixed 1927 was made a unit of the newly Soils In 1940 this Division was Industry, presently designated as the Bureau of Plant Industry, Soils, and Agricultural Engineering, and is now the Division of Fertilizer and Agricultural Lime in the Soils Group of that Bureau.

The present organization of the Division of Fertilizer and Agricultural Lime in the Soils Group of the Bureau, which includes the Division of Soil Survey and the Division of Soil Management and Irrigation, effectively implements integration of the Department's research on fertilizer technology with the soil studies and with the greenhouse and field investigations of the use and value of new and improved plant-nutrient materials in crop production.

EMPHASIS OF THE RESEARCH

Since 1911 the emphasis of the Department's fertilizer technology research has undergone several changes. As the work was initiated for the primary purpose of "exploration and investigation within the United States to determine a possible source of supply of petash, nitrates, and other natural fertilizers," the earlier investigations comprised chiefly searches for natural deposits of fertilizers and study of the possibility of their utilization, with special reference to sources of nitrogen and particularly potash to alleviate the Nation's dependency on fareign countries for these nutrients.

During the period 1915 to 1925 ma-

sor effort was directed toward development of methods for fixation of atmospheric nitrogen. For processing potash raw materials, and for processing potash raw materials, and for production of liquid phosphoric acid. Subsequently, the emphasis has been an transformation of ammomia, phosphoric acid, and potash into high-analysis compounds of satisfactory physical condition and better efficiency for erop production; development of more economical methods of processing phosphate and potash raw materials; investigations of liming materials and of the acidalled "secondary" and "trace" elements, such as calcium, magnesium, manganese, and boron, maprovement of the physical condition and plant-nutrient content of fertilizer materials and mixtures, evaluation of new products as sources of plant nutrients, and study of the consumption of plant nutrients, factors affecting consumption, and trends in fertilizer usage

FUNCTIONS AND ORGANIZATION OF THE DIVISION OF FERTILIZER AND AGRICULTURAL LIME

The primary function of the Division of Fertilizer and Agricultural Lime is, through research and investigation, to point the way to the development of more efficient fertilizers and liming materials and to the lowering of the cost of plant nutrients to the farmer. The Division is the only government laboratory.

in the United States, either Federal or State, devoted to the study of all phases of the technology of fertilizers and liming materials. It is the only government laboratory giving major emphasis to study of problems of the production of mixed fertilizers which constitute about 70 percent of the total tonnage of commercial fertilizer used annually in the United States. The Division is an important laboratory for study of methods of fertilizer analysis used throughout the Nation in State fertilizer control work.

The Division maintains close contacts with Federal, State, and private agencies interested in questions of fertilizer and lime resources, production, and use, as well as with associations, companies, and individuals in the domestic industry. These contacts include cooperative studies and investigations. An effort is made to maintain an up-to-date file of information on the world situ ation in all fertilizer matters. This is done in several ways, including contacts with industry associations, companies, and individuals in foreign countries—often on a personal basis.

The work of the Division is currently organized in five sections-fertilizer materials, mixed fertilizers, agricultural lime, analytical laboratory, and fertilizer supplies and consumption trends Greenhouse and field studies of the nutrient value of fertilizers in relation to their chemical and physical composition, properties, and characteristics are made in comperation with the Division of Soil Management and Irrigation and, through the latter Division, with State agricultural experiment statues. Cooperation is maintained with the Bureau's Division of Agricultural Engineering in fertilizer application studies that involve problems of the physical condition and characteristics of fertilizers.

Owing to changes in the physical location of the work, the Division of Fertilizer and Agracultural Lime has had no facilities for investigations on a pilot plant scale for several years. The lack of such facilities seriously handicaps the progress of much of the research and often prevents it from being carried to a

RESEARCH ACCOMPLISHMENTS

The researches of the Department of Agriculture—published in numerous public service patents and over 1,200 scientific papers and reportshave resulted in a number of outstanding contributions to fertilizer technology and to the utilization of the Nation's resources of fertilizer raw materials. Some of the accomplishments are outlined as follows.

Nitrogen

Studies were made of all phases of the synthetic ammonia process Efficient catalysts were developed techniques were determined for high pressure operations, and a great deal of fundamental research was surried out. These investigations added in the establishment of the synthetic ammonia industry in the United States, which is now fur mishing the greater portion of our requirement of nitrogen. The industry was placed on a successful commercial basis with the aid of a number of the Department's trained per sonnel.

Investigations of the transforma-

tion of synthetic ammonia into other compounds included studies of urea synthesis. The construction and operation of a one-ton urea plant, with concomitant researches, contributed to successful commercial production of urea, substantial quantities of which—in the forms of solid material and of solutions in aqueous ammonia—are now used as fertilizer in the United States.

During World War II the Department of Agriculture participated in the development of nearly pure ammonium nitrate for general use as fertilizer. The work included studies of granulation, surface treatments to decrease the rate of water absorption and prevent caking, packaging, shipping, storage, handling, methods of analysis, and fire and explosion hazards. The importance of this development is indicated by the fact that the United States consumption of fertilizer-grade ammonium nitrate containing about 33 percent of nitrogen now amounts to approximately 500,000 short tons annually. In addition, a very large tonnage has been produced for overseas shipment, chiefly to the military occupation areas.

Fig. 4 Dr. W. M. Myers inspects Partire Lair plots that show some strains of Kentucky binograps respond better than others to intrigen artiface.



Phosphate

The Department pioneered in studies of the production of phosphoric acid by electric and blast furnace processes. A highly important phase of the work was the application of the Cottrell precipitator to the recovery of phosphoric acid directly from the oxidation products of the furnace gases. These investigations resulted in successful large scale operation of both processes the electric furnace processes by private industry and later the Tennessee Valley Authority and the blast-furnace process by private industry. Fundamental studies were made of the production of elemental phosphorus by a blast-furnace method

Studies of the chemical composition of mineral phosphates from deposits throughout the world showed for the first time that fluorine is a universal constituent of calcium phosphate rocks and that the percentage of this element is usually considerably higher than was previously thought. The relation of fluorine to the properties and constitution of phosphate rock was studied and it was shown that for a given type of rock the ratio of fluorine to phosphorus is approximately constant. A method was devised for production of citrate-soluble phosphate fertilizer, which involves removal of the fluorine by volatilization at high temperatures in the presence of water vapor. This method is the basis of processes now in large-scale operation by a private company and by the Tennessee Valley Authority.

In cooperation with the fertilizer industry, studies were made at the reactions of free ammonia with superpliasphates. The maximum quantities of ammonia that can be safely added to superpliasphates, alone and in mixtures, were determined and the nutrient value of the products was investigated with the aid of several State agricultural experiment stations. This development, which eliminates the need for converting much of the ammonia into solid salts and affords a means for utilizing nitrogen in its cheapest forms, is of great importance to the fertilizer industry. Approximately 250,000 tons of nitrogen (about 27 percent of the total United States consumption of this plant nutrient) in the forms of anhydrous ammonia ammonia hquor, and solutions of ammonium nitrate and urea in aqueous ammonia are used annually in

this manner

Much attention has been given to the chemistry and technology of superphosphate, including studies of the sulfate and phosphate constiments, water relationships, and requirements, fluorine volatilization, and granulation, as well as the utilization of spent acids from industrial operations, especially petroleum refining and the alkylation process for high-octane gasoline.

Phase studies at high temperatures have been made of a portion of the calcium exide—phosphorus pentoxide system. Such studies have contributed to improvements in proresses for producing certain new types of phosphate fertilizers.

Potash

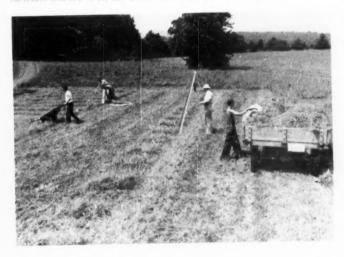
During the period 1911 to 1921 the Department of Agriculture, partly in cooperation with the United States Geological Survey, made extensive search for domestic sources of potasts, which resulted in utilization of the potasts bearing brines of Searles Lake, California, and of smaller lakes in Nebraska. These brines furnished most of the Nation's meager supply of potasts during World War I. Searles Lake has continued, of course, to be a very important source of potash, as well as of borax and other chemicals.

A process was developed and an experimental plant for extracting patash from kelp was constructed and operated in California by the Department for several years prior to 1929.

Extensive researches on recovery of pottash from potassium-bearing rocks were carried out Workable processes were developed but the cost of the potash obtained thereby was sugh that it could not compete with potash from brines and salt deposits.

It was shown that simultaneous volatilization of phosphorus and potesh can be effected by smelting mixtures of phosphate rock and potassium-hearing silicates in electric or diast furnaces. Methods for transforming potassium chloride into the sulfate, nitrate, and metaphosphate were studied and the nutrient value of the metaphosphate was investigated.

Fig. 5. Polycrosses and strains of orehard grass at the Pasture Lab are gathered by harvesters who new to the line and lot the failures tall where they may



Mixed Fertilizers

The manufacture and use of mixed fertilizers involves many problems of chemical reactions and physical condition, and of the selection of materials and formulation of mixtures for specific purposes. Changes in the types of available materials and in agronomic practices have necessitated a continuing program of research on mixed fertilizers. For more than 25 years problems in this field have received a great deal of attention in the Department.

Studies of the physical properties of fertilizer materials, including caking tendency, solubility, and hygroscopicity, are a necessary prelude to the practical use of the materials in mixtures.

Much work has been done on the segregation, granulation, caking, moisture absorption, and drillability of mixed fertilizers in relation to their physical condition and to their behavior on storage, handling, and distribution in the field. Considerable progress has been made, but new problems continually arise as new materials are introduced, as the plant-nutrient content of the mixtures is increased, and as the farmer demand for mixtures having better physical conditions becomes more exacting. Numerous studies have been made of chemical reactions in

mixed fertilizers, with special reference to the formulation of physiologically neutral mixtures, as well as to alterations in physical condition and losses of available plant nutrients that may be occasioned thereby.

Special attention has been given agents in mixed fertilizers in relation to the preparation of higher analysis mixtures. This work was an important factor in increasing the average plant-nutrient content of mixed fertilizers from 13.9 percent in 1920 to 22.55 percent in the year ended June 30, 1949. On the plantnutrient basis, this increase has resulted in the saving to farmers of portation, and handling costs. It is expected that further substantial increases in the plant-nutrient concentration of mixed fertilizers will be effected over the next few years, with large additional savings to the

Fertilizer Statistics

For a good many years an important phase of the Department's fertilizer investigations has been the compilation and dissemination of information on the Nation's sources, production, supplies, and consumption of fertilizers. Similar studies have been made of the world situation. Surveys have been made, annually in recent years, of the domestic use of plant nutrients in order to determine State, regional and national consumption trends in relation to grades and types of fertilizers, to types of crops, to changes in farming practices and economic conditions, and to recommendations of agricultural leaders.

These studies and surveys were of considerable value as aids to equitable allocation and distribution of fertilizers during the war. In conjunction with considerations of soil and climatic factors, farming and cropping systems, and other phases of the soil fertility problem, they are of great importance in peacetime as a basis for rational evaluation of State and regional requirements for different types and grades of fertilizers and for efficient use of fertilizers are material resources.

During the war numerous reports on the fertilizer supplies and raw-material resources of the Allied Nations and the enemy countries were prepared at the request of Federal agencies. Subsequently, aid on various phases of the fertilizer problem in the military-occupation areas, the liberated nations, and other countries has been rendered to agencies having responsibility for such matters. This aid has included on-the-spot investigations, chiefly in Germany and Japan.

CURRENT RESEARCH

The current research program of the Division of Fertilizer and Agricultural lime comprises the following general lines of investigation:

Production of high-analysis, synthetic nitrogen fertilizers of low solubility and controlled rate of availability to crops.

Quality of water-insoluble nitrogen in commercial mixed fertilizers.

Studies of the phase relationships in systems involved in manufacture of phosphate fertilizers.

Composition, properties, and fertilizing value of phosphates made by thermal and other processes.

Factors influencing the reactions in superphosphate manufacture.

Use of fillers, organic condition-

Fig. 1. A few Ladino clover plants in this group resisted Selectinia trifoliorum, but favored by a cool temperature (650. F), the winterkill fungus quickly knocked out most strains. The surviving plants encurage the research men to hope for still better ones, highly resistant and at the same time good yielders.







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ers, and neutralizing agents in mixed fertilizers.

Factors influencing moisture absorption, caking, drillability, and other physical properties of fertilizer materials and mixtures, including chemical reactions that cause loss of available plant nutrients during preparation and storage of mixed fertilizers.

Development of improved methods of fertilizer analysis.

Evaluation of agricultural liming materials.

Studies of domestic and world resources, technology, production, consumption, and trade of fertilizers and fertilizer materials.

The work on certain phases of these investigations is briefly summarized as follows.

Urea form

For several years the Division has been investigating the preparation, properties, and fertilizing value of urea-form (urea-formaldehyde reaction products containing about 38 percent of nitrogen). The products obtained by this reaction vary in solubility, ranging from readily soluble to practically insoluble compounds. With proper selection of the ratios between the two constituents and control of the conditions of preparation, products of designated solubilities can be obtained. The most promising products for fertilizer use are those that exhibit ureaformaldehyde mole ratios in the range 1.25 to 1.35. The products obtained do not represent a specific compound but rather a mixture of several, with the observed ratio as a mean value. Decreases in solubility and in the rates of hydrolysis, nitrification, and nitrogen availability to plants generally accompany decreases in the ratio of urea to for maldehyde.

Greenhouse and field experiments indicate that, owing to its low solubility, resistance to leaching, and slow rate of availability—character istics in which it differs from the customary chemical nitrogen fertilizers and in some respects from the natural organics—urea-form has promise of being a superior fertilizer for long-growing crops that re-

quire substantial quantities of introgen throughout the season. Grass and turf appear to be especially benefited by applications of ureaform and promising results have been obtained as regards its effects on the yield and quality of tobacco. In comparison with the customary chemical nitrogen materials it has the further advantage that very much larger applications of nitrogen can be made without danger of injury to crops.

Several potential manufacturers have indicated an interest in ureaform and it is expected that limited quantities from industry pilot-plant operations will be available during 1950

Quality of Water-insoluble Nitrogen in Commercial Mixed Fertilizers

Studies have been made of the permanganate solubility and rate of nitrification of the water-insoluble nitrogen in numerous official control samples of mixed fertilizers marketed in southeastern United States during the past several years. The portion of the water-insoluble nitrogen that was nitrified in 6 and 15 weeks averaged only 33.8 and 39.1 percent, respectively, as compared with 76.4 and 81.4 percent for the nitrogen of ammonium sulfate. In general, the water-insoluble nitrogen from mixtures in which animal tankage, caster pomace, and cotton seed meal were claimed as at least one of the organic ingredients exhibited higher nitrification values than those for which cocon shell, process tankage, peanut hulls, and tobacco stems were so claimed.

Although a significant correlation was observed between neutral permanganate solubility and nitrification, generally less than 50 percent of the nitrogen indicated as active by the permanganate value was converted to nitrate under favorable conditions maintained over long periods.

High-temperature Phosphates

Considerable attention is being given to study of the physical characteristics, chemical properties, and nutrient value of water-insoluble phosphates produced by high-temperature processes, especially the glasses such as calcium metaphosphate and the phosphate rock-magnesium silicate fusion product. The last two materials, when prepared in a way that precludes partial crystallization during cooling and when finely ground, are good sources of phosphorus for many crops especially on acid soils, but the crystalline products are of relatively little value. In general, water-insoluble phosphates appear to be decidedly inferior to the water-soluble forms for crops on alkaline soils. Within certain limits which differ with different products, the particle size of the material has a marked effect on the solubility of the phosphorus in neutral ammonium citrate solutions—as determined by the official procedure—and generally on its efficiency in promoting plant growth.

Radioactive Phosphorus Investigations

Work with radioactive phosphate fertilizers was commenced in the Bureau of Plant Industry, Soils, and Agricultural Engineering in 1947. Subsequently, many experiments on the plant uptake of phosphorus from applied fertilizers as related to plant species, soil type and fertility level, type and solubility of phosphorus carrier, placement and particle-size of fertilizer, and other factors have been carried out with radioactive phosphates by the Division of Soil Management and Irrigation, chiefly in cooperation with State agricultural experiment stations. This work has had the support of the fertilizer industry and the Atomic Energy Commission. The use of radioactive tracets provides a promising means of attacking difficult plant nutrent problems, not only of phosphorus but other elements as well.

The radioactive phosphate fertilizers required in the tracer studies are prepared in the Division of Fertilizer and Agricultural Lime, with the aid of specially constructed equipment. Their production involves the use of active monopotassium phosphate supplied by the Oak Ridge Laboratory of the Atomic Energy Commission. Some 1,300 pounds of active phosphate fertilizers, having a total activity equivalent to 31.5 grams of radium, were prepared for the experiments in

Conditioning Agents for Mixed Fertilizers

Manufacture of nongranular

Because of the total lack of in-

with the results of laboratory caking portance of the initial moisture con-

Surveys of Fertilizer and Plant nutrient Consumption in the United States

vision of Fertilizer and Agricultural and plant nutrients. For the year Territories, amounted to 18,542,000 trients nitrogen, I'O and KO ing 2,896,000 tons of plant nutrients.

and K.O amounted to 1,684,000 tons,

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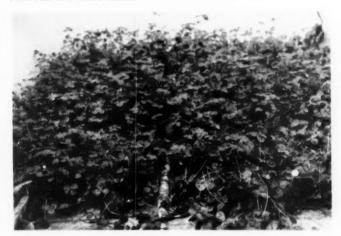
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25 GOOD YEARS AHEAD

(Continued from page 20)

Although the long-run farm income outlook is good, I don't assume that government farm programs will be discontinued. Rather, I assume that farmers can continue to count on government assistance in the price support and marketing field. But I think that more experience with these programs will make them work better as times goes on.

Against these four favorable long-term trends, there are two big questions:

First, can we maintain maximum employment, or something close to it, over the next 25 years?

I believe we can.

Along with full employment, wages are more likely to rise slowly over the future than to fall. That will help hold up prices, and national income.

Neither money nor credit policies are likely to be used to deflate prices or incomes.

We don't know all the answers, of course, but it is hard to conceive of American leader-ship failing to come somewhere close to this goal.

Second, how about our foreign markets?

For some time now, U. S. farmers have been sending roughly one-third of their wheat, cotton, rice, dried fruit, and flue-cured tobacco abroad.

But now dollars are scarce overseas. And in Western Europe, where our best customers live, food production is fast getting back to pre-war levels. However, European population is rising, too, and large quantities of American food, cotton, and tobacco will continue to be needed, if Europe is to bring back its pre-war scale of living. European farm production is still 10% per capita under pre-war.

Our immediate problem is to keep our exports from dropping too fast or too far, especially in the next 10 years, to give our domestic demand a chance to take up the slack, and to make the necessary shifts out of export crops and over to crops we need at home.

But there are positive forces at work too—forces which favor the gradual establishment of a more stable peace; the gradual removal of trade and investment restrictions over the world. The International Wheat Agreement is a product of these forces.

So now let's balance the current trends against the longterm trends.

Farm prices have been drifting downward. They've fallen 23', since January, 1948. But they fell more than 50', in one year following May, 1920.

I don't say that the recent price drop has been desirable. It hasn't been. But it does show that our prices are far more stable now than in the '20's.

Nor do I believe that the recent drop is a forecast of a continuing long-term trend. There are too many favorable factors at work.

The American market has

been steadily growing. We're using one-fourth more food in this country than we did a dozen years ago. We have 15' more people than we had in 1935-1939, and they're each eating, on the average, 10' more food than before the war.

We can look forward to still further increases in what we use at home, and our foreign markets are not all lost.

All this means that there is an excellent chance that farm prices and incomes over the years ahead can be maintained well above those which existed over most of the years from 1920 to 1940. That should hold true not only in actual dollars but, in lesser degree, to buying power.

I know that farmers face some difficult conversion and conservation problems—problems which can best be solved by a gradual shift toward more grass and more livestock. Farm Journal's promotion of the idea of more livestock to eat up or replace some of our surpluses is sound, provided livestock prices or returns are held at a fair level.

But given an understanding of the forces at work, and a willingness to face up to the problems, there is no reason why American farmers cannot increase both their farm returns and their standards of living over the years.

I'm confident that American farmers and people generally will face their problems boldly and intelligently

And that's why I say that the prospect for American agriculture for the next quarter of a century is good.

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(Continued from page 19)

Mississippi State College at State College, his alma mater, will follow Senator Holland with an address on "Plant Food and Pastures."

Well-known throughout the South as "the pasture man," Mr. Thompson has attracted widespread attention as a lecturer and leader with a down-to-earth approach to the problem of grassland farming in a sound agricultural program.

Appointment of Convention Committees, a brief business session and the election of nine members to the Board of Directors will be a feature of the June 30 session.

The six national winners in the 1950 essay contest on "Soil Fertility and the Nation's Future" will receive their awards Saturday morning, July 1 from Assistant Secretary of Agriculture Knox T. Hutchinson, Chairman of the National Board of Judges

Other National judges for the contest are: Dr. Hugh H. Bennett. Chief, Soil Conservation Service, U.S. Department of Agriculture: Miss Lois M. Clark, Assistant Director, Division of Rural Service, National Education Association; Dr. W. T. Spanton, Chief, Agricultural Education Service, U.S. Office of Education and Dr. M. L. Wilson, Director of Extension Work, USDA.

Sponsored by the National Grange and American Plant Food Council, the 1950 contest attracted more than 20,000 essays from young men and women in the 48 States and Dis-

trict of Columbia. Albert S. Goss, Master of the National Grange is scheduled to speak in connection with the awards which total \$10,000.

National prizes in the contest are: First, \$1,000; Second, \$500; Third, \$400; Fourth, Fifth and Sixth each \$300.

The National winner, to be selected in June, will read his or her paper as a feature of the presentation ceremonies.

On July 2, the Council's Board of Directors will meet to elect an Executive Committee and a new Committee Chairman.

Judge Woodrum announced the following Convention Committees: Convention-J. A. Howell, President, Virginia-Carolina Chemical Corporation. Richmond, Chairman; A. F. Reed, Vice President, Lion Oil Company, El Dorado, Arkansas; R. C. Simms, President, Naco Fertilizer Company, New York City: Paul Speer. Vice President, U. S. Potash Company, New York City; Fred J Woods, President, Gulf Fertilizer Company, Tampa, Florida and W. T. Wright, Vice President, F. S. Royster Guano Company, Norfolk, Virginia.

Credentials—W. L. Waring, Jr., President, Lyons Fertilizer Company, Tampa, Fla., Chairman; J. C. Crissey, Division Manager, G. L. F. Soil Building Service. Ithaca, N. Y. and Howard Fisher, Gen. Mgr., The Michigan Fertilizer Company, Lansing, Michigan.

Golf—Albert B. Baker, Jr., Bradley & Baker, New York City, Chairman, C. F. Burroughs, Jr., F. S. Royster Guano Company, Norfolk, Va.; Dean

R. Gidney, U. S. Potash Company, New York City; J. W. Ground, III, Thurston Chemical Co., Joplin, Missouri and W. F. McLane, Lyons Fertilizer Co., Tampa, Fla.

Hospitality-G. Tracy Cunningham, Asst. Gen. Sales Mgr., Armour Fertilizer Works, Atlanta, Georgia, Chairman; Paul Ausley, Potash Company of America, New York City; L. R. Boynton, Mgr., U. S. Potash Co., Atlanta, Ga.; Roy F. Camp. Vice President, Chilean Nitrate Sales Corp., New York City; Wm. B. Copeland, Vice President, Smith-Douglas Co., Inc., Streator, Illinois; Malcolm E. Hunter, Gen. Sales Mgr., Virginia-Carolina Chemical Corp., Richmond; F. B. Stephenson, Vice President, Robertson Chemical Corp., Norfolk, Virginia; J. D. Stewart, Jr., Executive Vice President, Federal Chemical Co., Louisville, Kentucky and G. A. Woods, Potash Company of America, Raleigh, North Carolina.

Ladies—Mrs. A. B. Baker, Sr. of New York City, Chairman; Mrs. Horace M. Albright of New York City; Mrs. H. B. Caldwell, Greensboro, N. C. Mrs. L. Dudley George of Richmond, Virginia; Mrs. John E. Sanford of Atlanta, Georgia; Mrs. J. D. Stewart, Jr. of Louisville, Kentucky; and Miss Martha Anne Woodrum of Roanoke, Virginia

Memorial—L. Dudley George, Sec'y.-Treas., Richmond Guano Co., Richmond, Va., Chairman; George T. Ashford, Manager, Liberty Manufacturing Co., Red Springs, N. C. and J. E. Culpepper, Asst. Gen. Sales Mgr., Spencer Chemical Co., Kansas City, Missouri.

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SECOND—a folder for your dealers to mail to their farmer customers. It's designed to fit a small envelope... can be mailed handily with monthly statements. It tells the farmer why he should use U·S·S Ammonium Sulphate to plow under, top dress or side dress.

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WOODS NAMED PRESIDENT OF COMMERCIAL SOLVENTS



J. Albert Woods

J. Albert Woods was elected President of Commercial Solvents Corporation at a special meeting of the Board of Directors, it was announced April 12, by Major Theodore P. Walker. Chairman of the Board.

In making the announcement. Major Walker said:

"I have known Mr. Woods for many years and have the highest regard for his business ability and his technical background in the field of agricultural chemicals, a field in which Commercial Solvents is very active. Mr. Woods, who is a Director, is ideally suited to head our company in its future growth."

For many years Mr Woods has been active in the agricultural chemical field, with experience in both production and sales. Prior to coming with Commercial Solvents, Mr. Woods was President of Wilson & Toomer Fertilizer Company, manufacturers of heavy chemicals, fertilizers and insecticides. He has also been a Vice President and a Director of the Armour Fertilizer Works, President of Chilean Nitrate Sales Corporation, and a Vice President of W. R. Grace & Company.

In a statement issued after the meeting, Mr. Woods said:

"As a Director of the company I am familiar with the activities of the corporation, its problems and promise for the future. I feel it is an exceptional opportunity to head the company at this time when activities in the Agricultural Chemicals Division are being expanded. I also feel that the Pharmaceutical Division offers tremendous possibilities for future development. In my opinion, the big growth industry of the next ten years will be the chemical industry."



Progress in Insecticide Research Reported

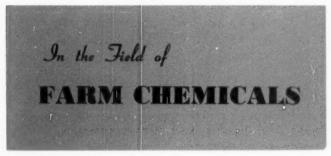
Research to probe the still unsolved question of how insecticides cause insect death is being furthered by work carried on under the Thomas J. Headlee Research Fellowship at Rutgers University.

The work of the Fellowship around the detoxifving action of insect body. Employing the adult periplaneta americana as a test organism, a representative group of the common insecticides has been screened with the purpose of determining the degree of specificity of gluthathione action. It is hoped that this research will serve to push back the frontiers of insect toxicology and develop a better understanding of the anti-insecticidal forces operative within the insect.

The principal of the Thomas J. Headlee Research Fellowship in Entomology has reached a total of \$30,000, according to Dr. William H. Martin, director of the New Jersey Agricultural Experiment Station. More than \$29,000 of this amount has actually been paid in to date. In addition donors contributing on an annual basis are currently putting some \$1,300 a year into the program.

The fellowship was established in 1944 at Rutgers, the State University of New Jersey, as a tribute to the late Dr. Thomas

Carl S Miner, left, who has been elected to the Board of Commercial Solvents He heads the Minor Laboratories in Chicago, and serves as consultant on research committees in a number of comorations. He holds the Perkin Modal



J. Headlee at the time of his retirement as chairman of the entomology department in the University and Experiment Station. Students and associates of Dr. Headlee subscribed more than \$1,000 to the fund.

The first fellow, John P. Reed, was appointed in September. 1946, and served until February. 1948, when he accepted a full-time appointment to the Experiment Station staff. His successor, and the present holder of the fellowship, is Andrew J. Forgash.

New Chemical Plant Opens In Mississippi

The new Coahoma Chemical Co. opened officially April 12 in Clarksdale. Mississippi, and Kinchen O'Keefe, president of the firm, said the plant will produce approximately 4000 tons of dust mixture and around 120,000 gallons of liquid emulsion for use by Mid South farmers this year.

The production will include agricultural insecticides, fungicides and dusts to be marketed under the trade name "Red Panther." Initial distribution will be made throughout Missispipi and in Northern Louisiana. Eastern Arkansas, and Western

Tennessee and Alabama.

Officers of the new company are Mr. O'Keefe, president; William H. Gresham, vice president; Buck Butler, secretary-treasurer; and Charles D. Carlton, plant chemist. Salesmen employed by the Coahoma Chemical Company are C. P. Land, Gregory Smith and W. H. Phillips.

Monsanto Develops Plant Regulator

Bigger and better fruit may be on the way, if experiments with plant regulators are successful.

In preliminary work last summer, plant scientists of the University of California produced lemons two and three times larger than normal. They did it by spraying the trees with tiny amounts of 2, 4, 5-trichlorophenoxyacetic acid, a synthetic plant growth regulator.

Both 2, 4, 5-T and its relative 2, 4-D, produced by Monsanto Chemical Company of St. Louis, have been used as weed and brush killers.

CSMA Offers Book on Farm Chemical Laws

A book, edited by John D. Conner, Washington attorney, and originally printed for the exclusive use of association members is now made available to non-members by the Chemical Specialties Manufacturers Association (formerly Nat'l. Assn. of Insecticide & Disinfectant Manufacturers, 110 East 42 Street, New York 17) The book covers the laws concerning farm chemicals both Federal and State, a list of enforcement ofquirement of each state and many other items of major value. The cost is \$25. In addition a revision service is offered at \$10 per year for five years.

Many Fruit Pests Controlled With Oil

A new type of spray oil for dormant trees, known as "superior" oil, is proving both safer and more effective than older type oils in controlling such pests of apples as European red mite, various scale insects, the apple red bug, fruit tree leafroller, and others.

The superior oil spray, which was developed by scientists at the Experiment Station at Geneva, New York is applied chiefly when the leaves of apple blossom buds are exposed about one-fourth to one-half inch. The oil is commonly used at a two per cent strength, although for apple red bug and fruit tree leafroller a three per strength is needed.

Powell Offers Allethrin

Allethrin, a new non-toxic insecticide material which promises to provide important and far reaching advantages to the U.S., will be made available shortly in limited commercial quantities, according to an announcement by Mr. H. Alvin Smith, Executive Vice-President of John Powell & Co., Inc., New York.

The name "Allethrin," which is a coined word suggested by the U.S.D.A. Interdepartmental Committee on Pest Control Materials, stands for a new synthetic organic compound technically known as allyl hemolog of Cinerin I.

This compound, a public patent invention of the Department of Agriculture, is being looked upon and widely investigated as a substitute for natural pyrethrum. Until now pyrethrum has been the safest swift-acting insecticide available.

Canada Switches To Aldrin For Grasshopper Control

This year the three great agricultural Provinces of Canada, Alberta, Manitoba and Saskatchewan have chosen Aldrin (Compound 118) to control grass-hoppers and pratect several million acres of wheat and other crops from destruction by these nests

So potent is Aldrin that the Considers are usual this elemical in dought of 2 ounce (Copound) to 4 ounce (Co-pound) per sere in suray or dust to obtain almost consider control of hospers 24 hours after applied

Experimental work has shown that 1 10-pound Aldrin in 100 pounds of dry bait will control grasshoppers when spread over 10 acres. These extremely low dosages of Aldrin for grasshopper control yield revolutionary economy and performance unknown before this chemical was developed.

Although Aldrin has been approved by the U.S.D.A. for cotton insert control, approval for grasshopper control in the United States has not yet been granted.

James R. Hile, General Manager, Insecticide Division, Acme White Lead and Color Works, has announced that J. M. Spooner. Assistant Manager, Insecticide Division, has been delegated responsibility for legislation and registration of agricultural chemicals, and that Paul H. Kelly has been transferred to the firm's Southwestern territory to direct sales of agricultural chemicals.

Hugh C. Land has been appointed Production Manager of the Pennsylvania Salt Manufacturing Company, Phuladelphia, and Alvin C. Ash has been appointed technical sales service representative for the Washing ton Agricultural Chemicals Division.

Earl C. McClintic, has been appointed Vice-President of the Pure Carbonic Company. He has contributed much to the Farm chemical



Haugh announces hits completely new yard Payloader Model HE. It will litt have; push and hauf Pull details if you write Prank G. Hough Co. 702 A. Sunny with Avenue Libertyville Illinois

industry during the fifteen year period of his chairmanship of NAC Traffic Committee. He has been Traffic Manager of the Chipman Chemical Company for many years.

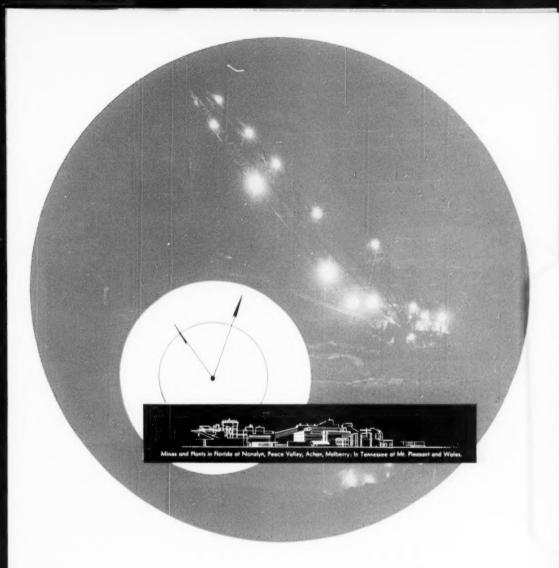
Advance Registration Is Heavy, Says NFA

The Centennial Convention of NFA, scheduled to be held at the Greenbrier Hotel, White Sulphur Springs, W. Va., June 12-14, will be one of the largest in history, advance registrations indicate. Attendance at these annual gatherings has increased with each passing year, and special interest is evident in this 1950 meeting, devoted to celebration of the founding of the industry 100 years ago.

In the face of these facts, it is found necessary to limit registration to members of the Association and contributors, to members of their families and to others who are specially invited. The Board has requested that all invitations be issued from the Washington office. Therefore, members having friends whom they would like to invite are asked to send their names and addresses to the Association officer.

New England Pasture Tour

The plant fool research committee of NFA has acronged a pasture tour in cooperation with the New England Green Posture committee to be held July 9 to 14 Fifty are expected to participate. The tour will cover points in Rhode Island Connecticut, Missachussets, Vermont, New Hampshire and Maine—two typical farms in each state to be viewed.



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A safer, better seed protectant

Pittiburgh Spergon-sl is a non-metallic organic chemical fungicide — a highly effective protectant against the harmful fungi that cause seed decay and "damping off" of plants in the early post-emergence stage. Spergontreatment of seeds, prior to planting, largely prevents seed and crop losses, as well as delays caused by necessity for reserving.

Best of all, it is a really rafe protectant to use rafe for humans, for animals, and for the seed itself. It is non-irritating to flesh or to the sensitive mucous membrane of the operator. And even an over-application of it cannot harm most valuable seed. More, this dry wertable powder can be used in either the slurry method or as a dry seed treatment and will not cause sticking or elogging in seed drills. It can be safely applied, too, with legume inoculation bacteria, if used according to directions. For corn, peas, beans, alfalfa and many other seeds, Patisburgh Spergon-sliss the "perfect" protectant.

Write for a bulletin giving full technical information.

Pittsburgh Phygon-xl*...
a new improved fungicidal spray

Puttburgh Phygon-xl is a highly effective spray for the control of many of the fungous diseases of fruit trees, ornamental shrubs, and vegetables. It may be utilized, also, as a seed protectant.

It is easy to use, may be added directly to the water in the spray tank and is compatible with lead arsenate, DDT, Rotenone and Chlordane.

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ALABAMA

Farmcraft of Alabama, Mobile, has announced plans to take over the control of high-grade phosphate deposits at Curacao, Dutch West Indies, a \$1,500,000 transaction involving an annual 100,000 tons to be shipped to Mobile for distribution

Lyle B. Palmer, president, announced that successful negotiations would be followed by plant expansion at Mobile. The concern is a subsidiary of Farmcraft. Inc. of Iowa.

ARKANSAS

Delta Liquid Fertilizer Co.. Inc., Helena, has been incorporated with a capital stock of \$50,000, by Mary Helen Rasberry, M. O. Rasberry, and David Solomon, Jr.

Arkansas Farmers Association have authorized the construction of a \$50,000 warehouse in which their fertilizer plant may store insecticides and other items in one season and ammonium mitrate during the off season. Six percent bonds will be sold to finance this addition.

CALIFORNIA

Shell Oil Co. San Francisco, despite a postwar investment of \$4,-000,000 which more than doubled production, is still finding it difficult Around the Map

to keep pace with demand both domestic and export. The \$20,000,000 plant on the Bay produces more than 300 tons daily of anhydrous ammonia and ammonium sulphate, an inferesting increase in the twenty years since if was established with a daily 45 tons of production. Plant manager is Eugene S. Bodine.

FLORIDA

Virginia-Carolina Chemical at e faced with legal action over the pollution of the Peace River, in DeSota County. A mass meeting demanded that the Hardee County commissioners take this action.

International Minerals & Chemical Corp., Bartow, will undertake a \$4,000,000 development, according to announcement made by President Louis Ware at a joint meeting of the Bartow civic clubs. The plans in clude a new office building on a sixty acre tract. Construction of a plant to produce multiple superphosphate and phosphate chemicals. Construction of a new sulphuric acid plant. Construction of a new machine shop, warehouse and service center at the Noralyn mine from which all IM&C Florida operations will be served. And a new analytical laboratory for the phosphate division.

The new chemical plant marks the first entrance of IM&C into phosphate chemicals and is consistent with their diversification policy

GEORGIA

Southern Fertilizer & Chemical, Savannah, voted a dividend of \$6 per share on the preferred, payable May 20 to stockholders of record May 1.

Virginia-Carolina's Charleston plant suffered a fire, following a series of explosions. The chief of police was of the opinion there was no connection between the explosions and the strike which has been in progress there for several months

KANSAS

Nitro Fertilizer Inc., Salina, has been granted a charter with \$60,000 capital, G. M. McClellan is resident agent





KENTUCKY

Commonwealth Fertilizer Co., Inc., Russellville, has built a plant to produce 5,000 annual tons. Joe Hicks, president; Nat Love, vice-president 15 employees.

MARYLAND

Wm. B. Tilghman Company. Salisbury, on whose publication "The Tiller" we have commented several times in this department, have just concluded the essay contest we mentioned last month. The editors of The Tiller offered \$175 in prizes for the best teen age essay on soil conservation.

We have here the program of the dinner honoring the winners, at which three top-placers read their essays, and Fred Bull. U of Maryland extension solid conservationist made the chief address. F. Nash Strudwick, editor of The Tiller presided. The three top essays and the first Honorable Mention were printed in full in the program.

On page 37 is a picture taken on NEW YORK the occasion.

MISSISSIPPI

Jackson Fertilizer Works, Jackson, suffered damages listed at more than \$100,000 when high winds blew off half of a building and destroyed 300 tons of sulphuric, when falling timbers toppled over the vats. Fortunately only one man was on duty there at the time. He suffered fractured arms and ribs.

NEW MEXICO

Edmunds-Hueter Chemical Co., Albuquerque, has opened for business with a mixing plant rated at 1,000 annual tons. It is a partnership of Edward Edmunds. Jr. and John W. Hueter. The former has been with Davison Chemical and Phillips Chemical. Mr. Hueter is a civil engineer with an active farming background.

Frazer New York Compost Corp., New York City, has been incorporated by I. Newton Brozan, Aaron

Holman and Ida Brozan.

TENNESSEE

McReynolds Nitro Co., Springfield, has set up an anyhydrous ammonia distribution plant. They are affiliated with Nitro of Columbia, Tennessee, and Mid-South of Memphis.

TEXAS

Midtex Liquid Fertilizer Co., Wate, has been granted a charter, with \$5,000 capital. Incorporators are T. W. Rogers, J. Leigh Brooks, and R. H. Claypool, Jr.

INDIA

The Sindri fertilizer plant, Bihar, is expected to be ready for production by August. It will produce about 350,000 tons annually.



ANNOUNCING!

PHILLIPS 66 PRILLED AMMONIUM NITRATE

PHILLIPS big new plant at Etter, in the Texas Panhandle, has started production of Phillips 66 Prilled Ammonium Nitrate! This high nitrogen material has a guaranteed 33.5% minimum nitrogen content. Its prills (small round pellets) are conditioned to flow freely and drill efficiently. Phillips 66 Ammonium Nitrate assures simple handling . . . is particularly suitable for all methods of direct application.

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PUERTO RICO

Ochoa Fertilizer Corporation have just opened a new plant in Guanica, on the South coast of Puerto Rico. This is a very modern plant, with an estimated capacity of one hundred thousand tons a year.

The plant has a pier of its own, and a very modern crane for unloading bulk material. The pier and plant were built by Robert R. Prann. a local contractor. The building is an all steel structure, covered with asbestos corrugated siding. Structural steel was supplied by the American Bridge Company. The building is 260 feet long, 100 feet wide and 70 feet high. This is the fourth mixing plant established by Ochoa Fertilizer Corporation. The first plant was established in Hato Rey in 1927. A second plant was established in Ponce, on the southern part of Pureto Rico Plant #3 was built alongside plant #1 in 1937.

Their Phosphate & Acid Works Division operates three plants in Hato Rey: one to manufacture superphosphate, the second to make sulphuric acid and the third one to make sulphate of potash and hydrootheric acid.

The Guanica plant was inaugurated on January 29th, with a big party attended by about 2000 people, including customers, government of ficials and friends from all over. The party was attended by a number of guests from the United Stafes, including John V. Freeman, Vice President, U. S. Steel Corporation, L. A. Frifchman, Asst. Vice President, Am. Tel. & Tel., James Lykes, Vice President, Lykes Line, Milton Jackson, President, Southern Trad

ing Corporation: Larry Wright, Phillips Chemical Corporation: Albert Terry—The Barrett Division: George Savitz—International Minerals & Chemical Corporation: William Berry, Nestle Chocolate Company, W. Proom—W. K. Proom & Co., George O'Brian—The American Insurance Company: Horace M. Grindell, Manager—The Royal Bank of Canada-Hayana, Cuba.

The Ochoa Fertilizer Corporation was established in 1927 by Luis R. Gonzalez who has been its General Manager ever since. Mr. Gonzalez became President on the death of his father, Rafael Maria Gonzalez who was the first President, in 1938.

Mr. Gonzalez is well known in fertilizer circles in the United States. He was recently appointed a member of the Board of Directors of the American Plant Food Council.

Clark Offers Rotating Clamp

For faster and more efficient handling of roll materials, a rotating clamp device is offered by Clark Equipment Company for use on all gas and electric carloader model fork-lift trucks with standard rated capacities of 3000 to 5000 pounds.

The new attachment has two basic actions—clamping and rotating. Rolls may be handled in either vertical or horizontal position, and changed from either position to the other. A roll can be rotated at uniform speed through 90 degrees.

Chilean Nitrate

"Industrial and Economic Progress In Chile" is the title of an attractively illustrated 72page booklet just published by the Chilean Nitrate Educational Bureau, Inc., 120 Broadway, New York, N. Y. It offers a new and stirring picture of Chile and its friendly people. In graphic style, it sketches the history of the country and its epic struggle for independence. Vivid descriptions of Chile's vast mineral and and social progress and its unsurpassed opportunities for yearround outdoor life, lend interest and charm to the fascinating

The outstanding feature of the booklet, perhaps, is the colorful material with which it is illustrated throughout, including 25 four-color plates of minor element deficiency symptoms and 28 attractive sketches by Hintermeister of Chilean scenes.

Bemis Community Fifty Years Old

Plans are nearing completion for the Golden Anniversary celebration on May 20 for Bemis. Tennessee. It was just fifty years ago that Judson Moss Bemis, founder of what is now known as Bemis Bro. Bag Co., and a pioneer in the bag manufacturing industry, decided to build a cotton mill in this Tennessee community to supply bag materials for his company's other plants over the country. Numbering six at that time Bemis Bro. Bag Co. now operates 31 different plants in 29 eities.

Tag Sales Continue High In March

Fertilizer tax tag sales, as compiled by The National Fertilizer Association, totaled 1,-329,000, equivalent short tons during the month of March. This, the second highest March total on record, fell short of the March 1949 figure by some 94,000 tons or about 5 percent.

Of the 13 States included in the tabulation, five including two of the three Midwestern States—reported greater equivalent tonnages than a year ago. During the first quarter of the current year, total tag sales were approximately 10 percent below those of the same period of 1949, although sales in Florida, Louisiana and each of the Midwestern States surpassed those of a year earlier.

FERTILIZER TAX TAG SALES AND REPORTED SHIPMENTS

(In Equivalent Short Tons)

Compiled by The National Fertilizer Association

STATE	March		Clade Year Cumulative January March		, Fiscal Year Cumulative July March	
	1950	1949	1950	1949	1949-50	1948-49
Virginia	125,578	141,575	306,552	340 025	494,980	530.931
N Carolina	322,102	333,876	693,255	957 822	884,007	1,421,760
S Carolina	190,018	246.566	546,628	617,600	746,772	853,540
Georgia	332,172	380,792	690,198	747,288	907,411	1,007,251
Florida	85,158	88,699	346,509	329,272	815 138	677,446
Alabamo	196,178	193 824	348,278	441,900	513,795	628,264
Tennessee	57,304	60,803	100 283	123,698	201,326	265 270
Arkansas	56.627	50,064	98,191	116,674	165,609	205,082
Louisiana	60,628	52,523	117,217	113,478	173.661	182,899
Texas	93,719	106,513	201,961	197,656	417,610	406 962
TOTAL SOUTH	1,519,484	1,655,235	3,449,072	3,985,413	5,320,309	6.179.405
Indiana	124.727	97,221	296,924	230,914	702.343	737,989
Kentucky	99.928	71,468	254,304	252,203	420,351	463.532
Missouri	84,869	98,886	218,735	215,192	386,719	400,948
TOTAL MIDWEST	309,524	267,575	769,963	698 309	1,509,413	1.602,469
GRAND TOTAL	1,829,008	1.922,810	4,219,035	4,683,722	6,829,722	7,781,874

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Continued from page 27:

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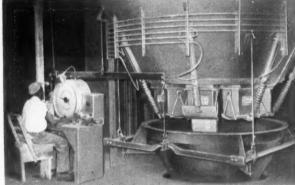


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A H. Carpenter, eastern sales manager of the farm chemical division of Mathieson Chemical Corporation, succeeding J. S. Whittington, who has been transferred to the overallieve officer of the division where he will do research and development work.

C. Cecil Arledge will become vice president in charge of sales of Virginia-Carolina Chemical Corporation on June I, it was announced April 28 by Joseph A. Howell, president of the chemical firm Mr. Arledge comes to Richmond from Atlanta, where he has been a sales executive of Armour Fertilizer Works for a number of years. In his new position, he will have general supervision of the sales activities of the V-C corporation.

Wiley Ellis, vice president Ellis Chemical Co., New Albany, Indiana is the proud father of a boy, redheaded Bill Ellis Margaret Ellis and president of the University of Kansas alumni association.

Dr. R. P. Thomas. U of Maryland professor of soils, has been made market survey specialist for the plant food division of International Minerals & Chemical Corp., according to announcement by Louis Ware, president. Dr. Thomas is on six months leave from the university, and his work is under the supervision of Maurice H. Lockwood.

George M. Barley has joined Diamond R. Fertilizer Co., Winter Garden, Florida, as general manager. He has been with Wheeler Fertilizer Co. and Ashcraft Wilkerson Co. Diamond R. has completely reworked the plant machinery, and are in position to increase tonnage materially. They write us these changes "will enable Diamond R to become one of the leading fertilizer companies in this area."

J. E. Totman, President of Summers Fertilizer Company, on April 14, gave an informal cocktail party at the Hotel Biltmore, New York City, for A. F. C. Van Den Bergh, Director General of the Diamond Fertilizer and Chemical Company of London, England, Guests were a representative group from the fertilizer raw material suppliers, brokers and manufacturers in the area of which about fifty attended. Mrs. Totman and daughter-in-law, Mrs. James C. Totman of Bangor, Maine, we re

Harvey C: Wilson has been transferred to southern Kansas to replace J. O. Frahm. Bemis Bro. Bag Co. salesman there, who has resigned to enter the real estate business. Mr. Wilson has more than thirty years.

Wilson has more than thirty years with Bemis W. B. Kruse. 12 years with the company moves into the eastern Kansas territory.

Edgar M. Queeny, chairman, and William M. Rand, president of Monsanto Chemical, were re-elected at the recent board meeting as were other officers. Four Monsanto scientists have been awarded leaves at full salary for an academic year of study at the universities of their choice. Dr. Ferdinand B. Zienty has been made associate director of the St. Louis research department of the Organic Chemicals division.

Kenneth A. Spencer, president of Spencer Chemical is a candidate for

Right T L Jones, promoted to Central Division sales manager by Arkell & Smiths and, left, Frank L Smith on the Central Division sales staff at Columbus, Ohio, The Central Division embraces Michigan, Indiana, Ohio, Western Pennisylvania, West Virginia, Southern Illinois and Kentucky





Hostonen

Mr. Van Den Berg was enroute home to London following an extensive business trip which included the West Coast. Hawaiian Islands and New Zealand. His Company deals extensively in the export of Superphosphates and Basic Slag from the Continent and Ground Phosphate Rock from North Africa.

OBITUARIES

George Ettinger Cope. 83, president Chatham Fertilizer Co., Jacksonville, Florida, March 27 of a fall from his third floor office balcony.

John Calvin Dobbins, 75, for half a century active in the fertilizer business, March 10, of a heart attack.

Dr. Thomas B. Hutcheson. 68, dean of agriculture at Virginia Polytechnic Institute, at his home in Blacksburg. April 8. He has often spoken at NFA conventions, was coauthor of the textbook "Production

of Field Crops." He died just after attending a meeting of the Southwest Virginia Agriculture Association.

J. Lee Swan, 65, Florida Favorite Fertilizer Company, Lakeland, Flori da, March 13 at a hospital there after a brief illness.





Left, Fred S. climsted who has been promoted to head up the distribution work of Eastern States Farmers Exchange, West Springfield, Massachusetts. He succeeds R. A. Waite, right, who has retired to his farm after filling the post since 1932. Mr. Olimsted has been his assistant since 1944.





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Blast Furnace Slag

AS AGRICULTURAL LIMING MATERIAL

F. L. DAVIS, B. L. COLLIER, AND O. R. CARTER A. P. L. Agricultural Experiment Station

The A. P. I. Agricultural Experiment Station, Auburn, Alabama, has conducted field and greenhouse investigations of the value of blast furnace slags as agricultural liming material since the summer of 1946. Slag from three different sources in the state have been used. The field experiments were located on soils of three distinctly different soil areas of the state: namely, (1) Norfolk loamy sand of the Coastal Plains, near Auburn: (2) a Lloyd sandy clay loam of the Piedmont, at Camp Hill: and (3) a Hartsells very fine sandy loam on Sand Mounfain, at Boaz. Tests of the comparative value of slag and lime for alfalfa and for a crop sequence of crimson clover and corn were made at each of the three locations.

Results with Alfalfa in the Field

The results have shown that "agricultural ground" blast furnace slag is a satisfactory liming material for alfalfa if used in adequate amounts. All of the "agricultural ground" slag used was fine enough to meet the standards of fineness for agricultural lime. The lime standards for Alabama require 100 per cent agricultural lime to pass through a 10-mesh screen and 45 to 55 per cent through a 60-mesh screen.

Three or four cuttings of alfalfa were obtained at all three of the locations during each of the summers of 1947, '48, and '49. Applied at the rate of two tons per acre, slag without boron produced more alfalfa than two tons of lime per acre without boron on the Norfolk and Hartsells soils, which were deficient in boron. Comparative vields of alfalfa on the Lloyd sandy clay loam did not establish a definite deficiency of boron on this soil. However, on this soil the yields of hav obtained from the two tons per acre of both lime and blast furnace slag without boron in either case, were somewhat, but not significantly smaller than yields from the same materials where borax was applied with the ferulizer.

When borax was added with the annual application of fertilizer, the two tons per acre of lime produced as much or more alfalfa than did the two tons of slag (either with or without borax) each year at all locations. Thus the superiority of blast furnace slag over lime was apparently due to the boron content of the blast furnace slag.

On the Lloyd sandy clay loam, four tons of slag per acre produced significantly more alfalfa than two tons of lime plus borax. This was due to the

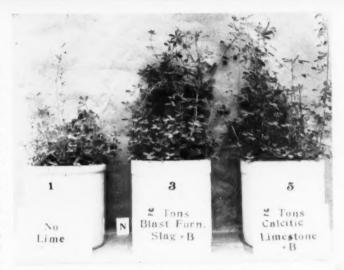
Fig. 1. Attalta on Hartsells very time sandy loam before first cutting, showing difference to coarse and to fine slag.



larger lime requirements on this soil. Two tons per acre of either slag or lime apparently supplied the lime needs of alfalfa for the three-year period on both the Norfolk and Hartsells soils. The yields obtained the third year from two tons of slag without borax were significantly less than those from the two tons of slag with borax on the Llovd and Hartsells soils. This shows that the boron contained in these slags was insufficient in amount to supply the needs of alfalfa for the full three years. The boron is, of course, removed from the soil in the harvested alfalfa hav.

Results With Alfalfa in the Greenhouse

Work with alfalfa in the greenhouse has included applications at the rate of six and eight



2 Alfalfa on Norfolk loamy sand before first cutting, showing similar results and to imestone, each with borax added.

tons per acre of 10 to 20-mesh and finer than 60-mesh slag as compared to two tons of agricultural grade slag and lime. All treatments were replicated

three times and alfalfa was consecutive years. All pots received the equivalent of 80 pounds of P.O. and 180 pounds

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of K-O per acre at planting and

The weights of alfalfa produced the fourth year in the greenhouse (cuttings nos. 14-17) by the six-and eight-ton application rates have been larger on either slag or limestone. However, the data are not conclusively in favor of the large rates of application. The first-year, (cuttings nos. 1-4) significantly larger yields were produced by the six tons of 10 to 20-mesh material on the Norfolk loamy sand and by the six tons of finer than 60-mesh material on the Hartsells very fine sandy loam. However, the vields obtained the first year from the eight-ton application rate of both the 10 to 20-mesh and finer than 60mesh slag on the Norfolk loamy sand were less than those obwas the only instance in which an apparent over-liming injury was produced by the large ap-Results with Crimson Clover-

Corn

Coarser grades of slag were compared to the agricultural grade of slag and limestone in the field tests with the crimson clover and corn crop sequence. All liming materials were applied at the rate of two tons per acre. A mixture of minor elements consisting of ten pounds of zinc sulfate, ten pounds of manganese sulfate, and five pounds of borax per acre were

With few exceptions the ments. On the Norfolk soil the all grades of slag gave larger the two tons of agricultural slag were larger than that from the coarse grade of slay only on the Lloyd sandy clay loam. Screen analysis of course grade of slag

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Fig 3. Crimson clover on Norfolk learny sand (second year) showing response to minor elements added to limestone.

used on the Lloyd soil showed that 93.5% passed through a 10mesh and 41.3% passed through a 60-mesh screen.

The yields of corn did not show any significant responses from the different grades of slag and lime. Corn yields varied considerably with the seasons, or from year to year on the different locations. It is interesting to note that yields between 66 and 63 bushels per acre were obtained the second year of the tests on the Hartsells soils. No nitrogen, other than that supplied by the crimson clover green manure, was applied to the corn,

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Summary

Blast furnace slags were compared with calcitic limestone as agricultural liming materials. Rates of application and grades of fineness of the slags were also compared. Alfalfa, crimson clover, corn, and sudan grass were grown on Lloyd sandy clay loam, on Hartsells very fine sandy loam, and on Norfolk loamy sand in greenhouse and field experiments over a three-year period.

At rates of two tons per acre without additional boron, significantly larger yields of alfalfa were produced from slag than from lime on the Hartsells and Norfolk soils. This was due to the deficiency of boron in

BULLETIN

OSCAR F. SMITH, President, Smith-Douglas Co., Inc., Norfolk, Va., and one of the original incorporators of American Plant Food Council, died suddenly of a heart attack in Greensbero, N. C., on May 4.

these soils. Alfalfa yields increased significantly with an increase in rate of application of slag from one to two tons on all soils and from two to four tons on the Lloyd sandy clay loam. The first year's yield of alfalfa and crimson clover from applications of coarse slag compared favorably with those from the agricultural grade only on the Norfolk loamy sand. The yields

of alfalfa and crimson clover from two tons per acre of agricultural lime when borax was applied with the fertilizer were as good as those obtained from two tons of slag on all soils. The larger yields obtained from slag over those from lime were due to the boron content of the blast furnace slags. Chemical analyses of soils and plant tissues showed that all soils studied except Lloyd sandy clay were deficient in boron at the beginning of the experiment and that each of the soils, whether treated with slag or limestone, without borax applications were near or below the critical level of soluble boron content by the end of the first year.

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Jwo Letters

Editor, Commercial Fertilizer

Sie

We would like to point out a minor discrepancy in the article "Thysiological Reaction of Aluminam Sulfate," by Mr. Vincent Sauchelli, appearing in Commercial Fertilizer, Vol. 80, No. 2, page 46 (Feb. 1950).

It would appear that the ratios expressed under

"Theoretical value

--- Therefore 300.3 = 0.4506 lb.

 $A1_2SO_4$: ISH_2O per Ib. $CxCO_3$ or, 0.4506 × 2000 = 901 Ibs, per ton $CACO_5$."

are mislabeled and should read. 300.3 = 0.4506 lb. CaCO₃ per lb.

 $\begin{array}{lll} A1_2SO_4.18H_2O & or, & 0.4506 \times 2000 \\ = & 901 & lbs. & CaCO_3 & equivalent & per \\ ton & A1_2SO_4.18H_20. \end{array}$

We do not wish to question the author's departure from the A. C. A. C. method of titration of this "ucid forming" equivalent but imagine that this point may raise some contractors.

> Yours very truly, A. P. Wood Research Division LION OIL COMPANY

Editor, Commercial Fertilizer

6 ...

Mr. A. P. Wood is technically correct in his statement. In the transmission to you the little word "equivalent" was left out. However, if you will refer to the article you will see that it was not possible to be misled because at the very top of the third column appears the statement: "Values as determined." (calculum carbonate equivalent per ton of material)." Then we further indicate in the same paragraph." [2] By hot titration method to pH 7.0 acid value... 900 lbs."

It might be advisable to publish a correction as indicated by Mr. Wood.

namely that the following statement

300.3 = 0.4506 lb CaCO₂ per lb.

ALSO, 1811.0

Or, 0.4506 x 2000 = 901 lbs, CaCO₃ controllent per ton ALSO, 1811 O.

We know that the departure from the AOAC method of tireation of the acid forming equivalent might raise some controversy. Our purpose in requesting publication was to call attention to the failure of the AOAC method to give the correct acid-forming equivalent. There is another consideration, namely that the water of hydration in the alumninum sulfate will vary depending on the temperature and relative humidity of the atmosphere. We arbitrarily chose 18 molecules of H₂O. These considerations, of course, are obvious to the analytical chemist but might not be to others.

V Sauchelli, Director, Agricultural Research DAVISON CHEMICAL CORF.



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MARKETS

ORGANICS: Organics for fertilizer use-continue scarce. Fertilizer manufacturers in recent weeks have been purchasing Organic sources of Mirogen for the new gerous. Tankage are in comfortably sold positions through techoler 1950. Prices on this material for Summer and early Fall shipment range from \$3.0 to \$110 per unit of Ammonia in bulk, depending on the production point. Imported Nitroge-naus for Summer and Fall shipment from abroad has recently sold at around \$4.73 per unit of Ammonia ex vessel Atlantic ports.

CASTOR POMACE: Sales have been made in the last month for Summer shipment at \$30.50 per for in bags fob. Northeast-ern production points, but as expected production is uncertain, producers are not offering for late Fall and Spring ship-ment as yet.

DRIED GROUND BLOOD: Chicago market is around \$5.50 per unit of Ammionia in bulk with buvers' ideas around \$6.25 New York market is stagnant at around \$7.25

POTASH: Production continues at maximum rapacity, but as pent-up demand continues strong, all available supplies are rapidly being taken up with no surpluses being accumulated.

GROUND COTTON BUR ASH: Sales continue steady at around 65e per unit of K2O Potash in bulk 1.0.b. Texas shapping point for material testing, 30% to 40% K2O and 3% to 4% Chlorine. The principal producer of ground material is heavily sold for April and May.

SUPERPHOSPHATE: Demand for normal Superphosphate continues strong with shortages developing at certain points in the midwest Triple Superphosphate is in heavy demand with supply madequate.

FHOSPHATE ROCK: Movement to do-mestic acidulators continues heavy and prices remain firm.

SULPHATE OF AMMONIA: Demand con inues steady from dom-stic users and export inquiry fair Most producers of conthetic material are sold up through

NITRATE OF SODA: As the season ad vances, buying interest is increasing for side dressing purposes. Stocks continue adequate.

AMMONIUM NITRATE: Market is tight as demand is in excess of available sup-ply. Sources of imported material are sold up for several months. Prices con-tinue unchanged.

GENERAL: Potash continues short of di-GENERAL: Foliash continues short of de-mand. Sincerphosphate in certum sections also is short of demand. Fertilizer manu-facturers are purchasing Organic Ammo-niates for the new season and offerings are not too plenting.

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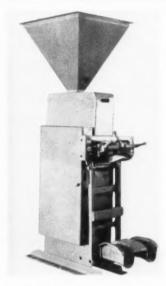
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Mente & Co., Inc., New Orleans bag manufacturers, will sponsor an Open House Cocktail Party in connection with the Joint Annual Convention of the Georgia Cottonseed Crushers Association and the Alabama-Florida Cottonseed Products Association to be held in Savannah, Georgia, June 3-6, 1950. The party will take place in the Sunrise Lounge of the General Oglethorpe Hotel at 6:30 p.m., on Monday, June 5, just preceding the Annual Banquet. Host of the party will be O. F. Littlefield, Vice-president and Manager, assisted by the staff of the Savannah branch of Mente & Co., Inc.



Scar-Lipman Moves Offices

Scar-Lipman & Co., Inc. fertilizer mterials, have moved their mailing adress to 20 Strathmore Lane, Rockville Center, New York.

Quaker Oats Moves Offices

The Quaker Oats Company has moved its Chicago general office to the Merchandise Mart. Address the company at Merchandise Mart Plaza, Chicago 54.

Carson Comptroller IAA. Succeeding Chapelle

Clarence C. Chapelle, retiring under the pension plan of the Illinois Agricultural Association, will be succeeded by Robert Carson, who comes to the association from Cuneo Press. Don Peasley has also joined the IAA staff as assistant in the publici-



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